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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,119	07/23/2001	Christopher J. Chase	SP01-189	2420

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CORNING INCORPORATED
SP-TI-3-1
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EXAMINER

KIM, AHSHIK

ART UNIT	PAPER NUMBER
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2876

DATE MAILED: 01/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/911,119

Applicant(s)

CHASE ET AL.

Examiner

Ahshik Kim

Art Unit

2876

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 17, 21, 22, 25, 26, 29, 30, 32-35 and 39-42 is/are rejected.
- 7) ☒ Claim(s) 8-16, 18-20, 23, 24, 27, 28, 31 and 36-38 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 7.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION – Supplemental

Drawings

1. The corrected or substitute drawings were received on September 24, 2001. These
5 drawings are approved and entered (paper #2).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

- 10 A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

- 15 2. Claims 1-3, 32, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Nielsen (US 6,151,123).

Re claims 1, 2, 32, and 39, Nielsen teaches a method and apparatus to obtain characteristics/properties of diverse arrays of materials (col. 4, lines 38+) including diffusion of molecule and diffusion rates (col. 9, line 62 – col. 10, line 18). Diffusion can occur horizontally
20 or vertically. Vertical diffusion can be considered as from an upstream area toward a downstream area.

Re claim 3, the apparatus can have array of various material differing in concentration (col. 4, lines 31-35) suggesting that the concentration of material is measured.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

5 (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10 3. Claims 4-7, 16, 21, 22, 25, 26, 29, 33, 35, and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen (US 6,151,123) in view of Ulmer (US 5,776,674). The teachings of Nielsen have been discussed above.

15 Nielsen fails to specifically teach or fairly suggest that the device is comprised of first and second compartments.

Re claims 4-7, 21, 33, 35, and 40-42, Ulmer teaches a system and the apparatus for observing chemical or biochemical reaction (see abstract) comprising a first compartment 100 in the form of a thin film (or a membrane) and a second compartment – group of sample wells 102 as shown in figure 3B (col. 4, lines 14+). As further disclosed, the first compartment can have a ligand molecule (col. 6, lines 57+) as recited in claim 7. Ulmer's system further comprising refractive index matching capacity (col. 2, lines 28+) as described in claim 16.

20 In view of Ulmer's teaching, it would have been obvious to an ordinary skill in the art at the time the invention was made to employ well-known device having separate compartments, which allows interaction between target materials to the teachings of Nielsen in order to observe chemical/biochemical interaction. It is also noted that the reference to Nielsen does not provide

a great detail on the structure of the apparatus. Adapting the apparatus disclosed in Ulmer, Nielsen not only observes the characteristics of materials, but also is able to observe and measure the interaction between receptor and a ligand molecule.

Re claim 22, Nielsen further discloses that the material to be observed/interrogated
5 includes polymers (see abstract).

Re claims 25, 26, and 29, when the sample is created, the substrate 102 becomes a substrate on which the light can be applied, reflected, and diffracted. The sample wells can be interpreted as an opening, which generates diffraction pattern.

10 4. Claims 30 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen (US 6,151,123) as modified by Ulmer (US 5,776,674) as applied to claim 29 above, and further in view of Hirleman, Jr. (US 5,007,737). The teachings of Nielsen as modified by Ulmer have been discussed above.

Nielsen/Ulmer fail to specifically teach or fairly suggest that the optical device used in
15 observing the sample generates Frunhofer diffraction pattern.

Hirleman, Jr. teaches a particle sizing system (see abstract) comprising an optical system (see figure 3) generating Frunhofer diffraction pattern (col. 5, lines 43+).

In view of Hirleman, Jr.'s teaching, it would have been obvious to an ordinary skill in the art at the time the invention was made to further employ well-known Fraunhofer diffraction
20 effect to the teachings of Nielsen/Ulmer in order to capture additional data-providing information on the sample material. Since Fruanhofer diffraction pattern is generally a curricular or symmetric in nature, such pattern can be used in calculating how fast or how wide diffusion occurs from the receptor material to ligand (or to buffer solution). It is the Examiner's view that

Fraunhofer effect is well known in the art, and widely used in a measurement apparatus including optical system. Accordingly, one of ordinary skill in the art to incorporate such feature to collect the data from the sample, although embodiment disclosed in Hirleman, may be in different area than claimed invention in instant application.

5

Allowable Subject Matter

5. Claims 8-16, 18-20, 23, 24, 27, 28, 31, 36-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the
10 limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: the claims are directed at a system and the method for detecting diffusion of biomolecules utilizing
15 optical detection component. Such detection system comprising an assay, sample dropping apparatus and applying ligand (or other binding agent) is fairly well known and disclosed in some of the references cited. However, the cited references, taken alone or in combinations, fail to suggest or teach a specific apparatus whose structure includes Y-shaped area including
20 sensing area. The system also detects change in the far field diffraction pattern generated by three laterally spaced openings as set forth in the claims.

Additional Remarks

7. As indicated in accompanying interview summary, this Office Action is a supplemental Office Action to the initial Office Action (paper #5), and therefore made non-final.

Conclusion

I. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: King et al. (US 5,812,272); Hoffman et al. (US 5,528,045); Layton et al. (US 5,118,608); Obremski et al. (US 6,110,749); Schrof et al. (US 5,949,532); Shieh et al. (US 5,671,303); Ryan et al. (US 6,462,809) disclose systems detecting biochemical characteristic/interactions.

II. Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Ahshik Kim* whose telephone number is (703)305-5203. The examiner can normally be reached between the hours of 6:00AM to 3:00PM Monday thru Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee, can be reached on (703) 305-3503. The fax number directly to the Examiner is (703) 746-4782. The fax phone number for this Group is (703)308-7722, (703)308-7724, or (703)308-7382.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [ahshik.kim@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Ahshik Kim
Patent Examiner
Art Unit 2876
January 9, 2003


MICHAEL G. LEE
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